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ACCESSIONS.—Among the accessions to the Library and Map-rooms since the former Meeting were the Radcliffe Catalogue of Stars; Bohn's Pictorial Geography; Bagster's Bible of Every Land; Stainton's Entomologist's Annual for 1861; Stanford's Australia; Commander Maury's Storm and Rain Chart; M'Douall Stuart's Map of his discoveries in Australia; Schwenzen's Map of Sweden, Denmark, and Norway; Williams's Map of Pegu, and Hobday's Martaban; Du Chaillu's Western Equatorial Africa, &c.

EXHIBITIONS.—Certain specimens of Australian Ores, presented to him by Mr. A. C. Gregory, of the North Australian Expedition, were exhibited by Professor J. Tennant, F.R.G.S.

The Paper read was—

Journal of his Expedition across the Centre of Australia, from Spencer Gulf on the South to Latitude 18° 47' on the North. By J. McDouall Stuart.

Communicated by Messrs. CHAMBERS and FINKE, through SIR R. I. MURCHISON,
VICE-PRES. R.G.S.

[The paper will be printed in the Journal.]

FROM the Journal of Mr. Stuart it appears that he left Chambers Creek, in South Australia, at the beginning of March last year, with Mr. Keckwick and one other man, and proceeded in a north-westerly direction, his object being to penetrate across the continent. As he proceeded, instead of meeting with an arid desert, as geologists had predicted, he found a well-watered country, with numerous creeks, several rivers, abundance of grass and scrub. The geological character of the country for the first 400 miles was tertiary and secondary, and occasionally he saw large masses of sandstone. He then crossed a high primary range, and for the remainder of his advance met with little else than the older rocks, or those of volcanic formation. He proceeded without meeting with any serious obstacle, and without encountering any of the natives, until he reached the centre of Australia. There he erected a pile of stones, planted the British flag, and enclosed within the pile a bottle containing a paper with a notice of the fact. This occurred on the 16th of June. On his progress north-west his difficulties commenced. The scrub was in places impenetrable, and he was obliged to make his route more easterly towards the Gulf of Carpentaria. Water became scarce, and the soil sandy. The vegetation hitherto met with had been principally scrub and gum-trees, but on approaching the central regions he saw palm-trees. Water was procured at a short distance under ground, but there was none on the surface.

The country Mr. Stuart had passed through, after the first or M'Donnell range, had been undulatory or flat; but on advancing north he came to ranges of mountainous hills, the principal of which he called the Murchison range; and from these hills the rivers that flow north-west and north-east take their rise. Looking from an eminence towards the west he saw a high mountain and elevated ground. The valleys between the ranges of hills were fertile; and one river, which was flowing towards the north by west, was about ten chains wide, and had the appearance of being a constant stream. This he conceived to be the character of many of the creeks and springs that he came to. On looking towards the east there were indications in the atmosphere of the presence of a large body of water behind the high land which bounded the horizon in that direction. Until he reached the range of hills he had not seen many natives, though numerous traces of them were frequently observed; but they then began to show themselves, and made hostile signs. Two of them were first seen near the scrub, but as soon as Mr. Stuart approached they ran away. A few days afterwards they appeared in greater numbers, and, with menaces, made signs to his party to go back. It was in vain that Mr. Stuart made friendly demonstrations; and at last the natives threw a shower of boomerangs at him. His men were ordered to load their guns, and as the savages approached nearer for the purpose of surrounding the little party, they were compelled to fire. The savages did not desist from their attacks, and a second volley was fired at them. Under these circumstances Mr. Stuart, with great reluctance, felt obliged to retrace his steps. He returned to the point he started from on the 9th of September, after having travelled upwards of 2300 miles in six months and two days, and having penetrated within 250 miles south-west of the Gulf of Carpentaria. The geological character of the mountainous ranges was igneous, the appearance of quartz and other granitic rocks giving evidence of the presence of metallic treasures. Only one portion of the route, for the distance of about 60 miles, was sterile and sandy.

The PRESIDENT said, of the various subjects that had been brought before the Society, he knew of none which exceeded in importance the one they were about to discuss. Explorations in Africa, or in any other part of the globe, were interesting to us as citizens of the world, but the present exploration was interesting to us, not only as citizens of the world, but more especially as citizens of this great country. We might take pride in the fact that a discovery had been made, not at the expense of the Government, but of two or three of our fellow-citizens; who, not daunted by a succession of disasters and failures, had not shrunk from supplying the necessary funds, and they further had the judgment to secure the proper man, to whose abilities, energy, and perseverance, was owing the success of the expedition. And so great was

Mr. Stuart's energy that he had gone forth again with a larger party, with strength sufficient to daunt the natives, and to overcome any of those impediments which had been the cause of his returning on the last occasion. There was one curious circumstance: it was that an old chief, accompanied by two sons, made a freemason's sign to Mr. Stuart; and on Mr. Stuart looking intently at him he repeated the sign, and showed great satisfaction when it was answered.

SIR RODERICK MURCHISON, F.R.G.S., said he had always taken a special interest in the exploration of Australia, and had lost no opportunity of stimulating those researches, which had terminated in this most glorious expedition of Mr. Stuart. The exploration, though carried out by private individuals, had been warmly encouraged by the Governor of the colony, Sir Richard M'Donnell. Gentlemen would recollect that a very expensive expedition had been sent out, with twenty camels, from Melbourne, to accomplish the same end from another point. In the mean time Mr. Stuart, with his two men and thirteen horses, had accomplished more than the efforts of all other explorers in that direction. Ever since he (Sir R.) had been connected with the Society he had had at heart the establishment of some colony in one of the great bays on the north of Australia, either in the Gulf of Carpentaria, or more particularly in Cambridge Gulf, or near the mouth of the Victoria River, where Gregory's expedition was so long encamped.

He was now about to make an apology for a theoretical opinion he had formed as to the difficulty of traversing this continent; and he might explain why he, in common with other eminent geographers, had entertained great doubts upon the feasibility of this enterprise. When Mr. Gregory arrived at the extreme point of his expedition from the north, he was stopped by a completely saline desert. Again, when Captain Sturt advanced into the centre from the south, he also was stopped by an impenetrable saline desert. With these facts before them, it was not unreasonable to arrive at the conclusion that the interior consisted of desert. Yet this Stuart, who was one of Sturt's men, devised for himself the route which he had taken, and which he had so successfully followed. The discovery might be of very great importance to this country, because, with the establishment of a port of refuge or a colony on the north coast, it would give us a ready access to the Eastern Archipelago, and also enable us to lay down a telegraph for communication right across the continent with all our great colonies in the south and west of Australia. Sir Richard M'Donnell proposed that the whole of the interior in question should form a part of the colony of South Australia. He could not sit down without acknowledging the high credit that was due to Colonel Gawler, formerly Governor of South Australia, who, in spite of the reasoning of others, and in spite of adverse appearances, had always maintained that a passage could be accomplished.

COLONEL GAWLER, F.R.G.S., complimented Sir Roderick Murchison upon his candour in acknowledging that he had altered, to a certain extent, his former opinion. It was like men of true science, who, when realities came before them, grasped them at once, notwithstanding their own anticipations. They had stood opposed, but it was an amicable suit, and at last Mr. Stuart had settled the question. He (Col. Gawler) rejoiced in the result, not because it proved that his anticipations were correct, but on account of two circumstances which had been often referred to. In the first place, it showed that Great Britain possessed in Australia not only capabilities for a fringe of colonies with some twenty or thirty millions of inhabitants along the shores of that continent, but capabilities for a great and compact empire, which might possibly contain a hundred millions of souls. A perusal of Mr. Stuart's narrative satisfied him that, from Chambers Creek to the end of the flat-topped hills near to the James and M'Donnell ranges, there was a very beautiful country for

Australia. In the Adelaide district, the proportion of good to inferior land was about one-third; and he thought the same proportion would be found to prevail in this newly-discovered territory. The M'Donnell range was manifestly the great dividing barrier between the waters of Northern and Southern Australia; and, as Mr. Stuart observed that the streams south of that range flowed in an easterly and southerly direction, it left the water system of Western Australia a greater mystery than ever. He quite expected that a large portion of the drainage of Western Australia went down into Lake Torrens, but it was now quite evident that it did not take that course. In the next place, he conceived there would be no difficulty in running a line of railway to the northern coast, except over the M'Donnell range; for on the other side of the range there were the immense plains where Mr. Stuart was turned back. These plains extended, apparently, up to the Red Sand, which stopped Mr. Gregory from the Sturt Creek. But on them there was a large number of gum-trees, and the gum-tree would never grow without moisture; and, though there might be no surface water, yet it was evident there must be a large amount of water below the surface. Therefore he saw no reason why a line of communication should not at once be carried across from the south-eastern coast to a north-western colony, and thus open an outlet for the produce of the continent, to be shipped to the rich neighbouring islands and the southern parts of Asia.

MR. C. BONNEY said he could bear testimony to the energy, courage, and endurance that must have been required to accomplish the journey undertaken by Mr. Stuart. He had recently returned from Australia, and five months ago was within a few hundred miles of the centre of that continent. It was then the cool season, but even at that time travelling was a work of great difficulty from the almost entire absence of water and grass for horses. He could, therefore, well appreciate the merit due to Mr. Stuart and to Messrs. Chambers and Pinke, who had fitted out the expedition. But with regard to the result of the journey, it must not be too hastily concluded, that because Mr. Stuart had been able to cross from south to north, therefore the whole interior of Australia was a good and habitable country. His own impression still remained the same, that the great bulk of Australia was uninhabitable. There was no country more likely to deceive the traveller from the different aspect which it bore under different circumstances. A traveller going through the country after rain would be led to the conclusion that he saw before him a fertile country; but if he went a few months afterwards, he would find nothing but a sterile desert, altogether unfit for the habitation of man.

He had that day received a letter from Captain Sturt, the well-known Australian explorer, from which, with the permission of the President, he would read an extract.

He rejoiced, however, to think that at last a practicable route had been discovered from south to north, which might be made available for the electric telegraph and railway communication.

"I am not at all surprised at Stuart's success, for I know him to be a plucky little fellow—cool, persevering, and intelligent, as well as an excellent bushman; so that when I heard that he had gained such a footing in the interior on his first excursion, I felt sure he would succeed in crossing the continent sooner or later. He is entitled to all praise for his exertions; and it is really a matter of pride to me that it has fallen on one of my oldest and best followers to have achieved so very creditable an enterprise, and to have shown so much energy and zeal. He has fairly passed, or I should say surpassed, me, and may justly claim the laurels.

"Now with regard to his journey, and the character of the country he traversed, as far as I can judge from his letter to Chambers, I am really surprised that he did not cross any desert such as he and I traversed together.

He states that he crossed a plain of red sand with spinifex of about 60 miles in breadth, on which, I presume, there was no water; and this tract I should be disposed to call desert, though of limited extent; but I took it for granted that as Gregory, in lat. 20° and in long. 127° , found precisely the same kind of country as that from which I was forced to retreat in lat. 24° and in long. 138° , so the intervening country would be the same.

"Gregory found the creeks by which he descended from the hills to the south underwent exactly the same changes as those by which I had advanced towards the north—that is to say, that they gradually lost their current, assumed the character of a chain of ponds, and were ultimately lost amidst sandy ridges. Having myself penetrated at least 400 miles into the desert, I could not have imagined that it would so soon change its features to take them up again at a distance of 700 miles, that being about the distance between Gregory's position and my own.

"I believe Stuart started with the intention of making Cambridge Gulf on the west coast, but that, not being able to push to the westward, he ran up north, and passed about midway between Gregory and myself, and as near as could be the centre of the continent, and, being forced to the eastward of north, at last succeeded in gaining the southern fall of water, in lat. $19^{\circ} 47'$ and in long. 134° , which would be a point about 280 or 300 miles from the Gulf of Carpentaria in a n.e. direction, about 380 miles from me in a s.s.e. direction, and about the same distance from Gregory in a direction of w. $\frac{1}{4}$ s. Stuart's course must therefore have been to the *eastward* of the point from which he started, the nature of the country being such as to prevent his going to the *west* of it. Now if you refer to the Introduction to my Central Expeditions you will find that one reason I gave for taking the line I did was, that from observations I had made of the migration of birds on the banks of the Darling and in South Australia, I had been led to hope that about lat. 20° and long. 134° a better country would be found, because I calculated that the two lines of migration would meet, the one n.w. from the Darling, the other due s. from the shores of St. Vincent's Gulf, about where I have pointed out; and there, it would now appear, Stuart has discovered a better country, and added another proof to the many that have been recorded of the truth of these natural indications.

"Had Gregory found it practicable to keep more to the south, when crossing from the Victoria to the Gulf of Carpentaria, he would probably have struck the heads of the creek from which Stuart retreated; but he was forced to the north by the sandy and sterile nature of the table-land on which he travelled, and could never get a glimpse of the depressed southern interior. I take it that the country Stuart has discovered is far to the south and west of Gregory's track. Van Diemen and Arnheim Lands must at one time have been an island, as the whole continent was once an archipelago; and it was the conviction on my mind as to this fact that led me to hope Gregory would be able to descend at different points of his passage across the northern portion of the continent by streams, the *opposites* to those debouching on the coast, of which there are so many; but from the account he gave of the appearance of the country to the south of him, I was led to apprehend that the desert came right up to where he was, and that vast masses of sand having been deposited on the southern slopes of the hills imbibed all the water, and thus rendered a descent to the south impossible.

"It is worthy of observation, that whereas I found the sand-hills running n. and s. nearly, Gregory, at a distance of 700 miles to the w.n.w., found them running e. and w. nearly, and that too at a difference of elevation of between six and seven hundred feet."

COL. SYKES, F.R.G.S., said he should not have risen but for what had fallen from the last speaker, whose observations would seem to modify the expecta-

tions held out by Mr. Stuart, of the country being habitable and suitable for colonization. An extensive and impenetrable scrub was found flourishing in the tract, therefore there must necessarily be a supply of moisture to enable the scrub to grow. Whether the water was under or over the surface was another question, but there must be moisture to a great extent. Again, physical geographers were aware that the world was surrounded by a belt $22\frac{1}{2}^{\circ}$ to the north and to the south of the equator which was subject to annual supplies of water both during the south-west and the north-east monsoons. The greater portion of Australia traversed by Mr. Stuart lay within that parallel, and it was therefore natural to assume that it came under the same physical conditions as other parts of the earth as to supply of moisture. This probable fact would remove the impression that might have been produced upon the minds of the audience by what had just been said.

LORD ALFRED CHURCHILL, F.R.G.S., stated that he had received a letter by the last mail from Sir Charles Nicholson, which bore out the observations of Sir Roderick Murchison relative to the capabilities for the formation of a colony in the northern part of Australia. The discovery of Mr. Stuart was likely to effect very great consequences to the future of Australia, because according to the present means of connecting Sydney and Melbourne with India, a very long and dangerous voyage was necessary. Now, if it was possible to form a new colony at the north of the continent, the establishment of telegraphs and railroads, to which he saw no physical objection, would be of very great value to the south by opening up a direct communication with it. With regard to hot winds, at Melbourne they came from the north, and at Sydney from the north-west; and the theory had been formed that those hot winds were caused by passing over a desert tract in the centre of Australia. That had been proved by Mr. Stuart not to be correct as regarded the whole of the interior. Possibly there might be desert on both sides of the region he traversed. However, so far as he had gone he had discovered a fine country, which, from its peculiar formation and peculiar vegetation, might afford or would afford facilities for intercourse between the northern and southern parts of the continent.

COUNT STRZELECKI, F.R.G.S., reminded the meeting that in 1858 he was selected by Sir Roderick Murchison to transmit to Mr. Stuart the first token of the Society's approval of his exertions in exploring the north at his own expense; and having on that occasion expressed his belief that this acknowledgment would stimulate Mr. Stuart to further exertion, he was extremely happy now to find that his expectations had been more than realised. Mr. Stuart had cleared up the mystery which for so long a time had hung over the centre of Australia. After reviewing the various theories which had been propounded based upon the observations of previous travellers, Count Strzelecki said that he was at one time himself of opinion that the interior was a vast desert. He was ready now to recant that view, to acknowledge the value of the discovery which Mr. Stuart had made, and to render full justice to those, less successful, who preceded Mr. Stuart in his enterprise.

The Noble PRESIDENT, in closing the discussion, said, this no doubt was a most important point in the history of Australia; and both that country as well as our own must feel deeply indebted to the individuals who had either contributed the means, or through whose gallantry and energy the exploration had been so successfully carried out.
